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Q&A With Man Who Threw the Switch

Science86: Did This Magazine Have to Die?

Recriminations and conflicting reports have followed the sale to Time Inc. of *Science86*, the prize-winning, money-losing general science magazine of the American Association for the Advancement of Science. Popular with readers, but battered by an advertising drought afflicting all the sober pop-science periodicals, *Science86* was sold into oblivion. As announced by Time Inc. and the AAAS on June 27, *Science86* has been terminated and its mailing list, reportedly totaling 700,000, will be turned over to its chief competitor, *Discover*, Time Inc.'s own prize-winning, money-losing science magazine.

The price was short of the monumental sums for which big-circulation editorial properties have recently been selling. The AAAS gets \$3.75 million down, \$2.25 million over 5 years, and up to \$1 million for *Science86* expiries who renew for *Discover*. At sales time, *Science86* was financially anemic and losing circulation from lack of promotion to replace its dropouts. One report has it that true paid-up circulation had slumped to 522,000.

Q. Were you centrally involved in the sale of the magazine?

Carey. Every step of the way. I was in charge of it. And it was a killer. I suppose I can say these last 3 months have been the blackest in my experience.

Q. A lot of people are saying that *Science86* was needlessly killed, that it could have survived. Why did the AAAS decide to sell it and under conditions that ended it?

Carey. Advertising had fallen from about 400 pages in 1983 to about 200 pages. We came into this fiscal year assuming that things were going to turn around and get better. We didn't quite know what had happened to us, but we thought, well, they have to get better; we must be at the bottom point. And that turned out to be overly optimistic. Instead of breaking even, it began to be very clear that we were still on the down slope. Early this year, I asked our advertising sales people how they really looked at our prospects for booking advertising through the remainder of the year. They were very frank with me. They said their best estimate would be, per issue, maybe 14 pages, maybe 15 pages. And then I knew we were in very deep trouble.

I convened the [AAAS] Board in February. We knew that disposal of the magazine would be one alternative, which none of us wanted. We looked at a survival mode

The sale took place despite a frantic, last-minute buyout rescue effort by the founder and editor of *Science86*, Allen L. Hammond, in alliance with Owen J. Lipstein, who served as General Manager on the magazine's 1979 startup team. Lipstein, famed for a golden touch in the magazine business, went on to found the hugely successful *American Health* after he left the AAAS.

Hammond argues that with stringent economies, *Science86* could have survived a long wait for better times. Lipstein says the AAAS loaded the dice in favor of Time Inc., failed to pursue alternative sales possibilities, settled for an unrealistically low price, and needlessly rushed the sale before his group could muster financing. But a Time Inc. source told SGR that it's doubtful that anyone else would have paid that price.

SGR discussed these matters July 22 with the architect of the sale, William D. Carey, Executive Officer of the AAAS since 1975 and publisher of *Science86*. Following is the text, edited by SGR.—DSG

which would have meant reducing our circulation to something like 500,000, from 700,000; reducing the frequency of the magazine to half the number of issues, hopefully, fatter issues, and reducing staff by half.

But Allen Hammond made it very clear that, while this would get us through on a break-even direct basis, for maybe a year or 2, by that time it would be necessary to reinfuse capital in the magazine.

Q. For what?

Carey. For promotion, for rehabilitation generally, because we would have been operating at a very austere level, which carries its penalties. Really savaging the magazine would have made it possible for us to keep the flag flying and to deliver a thinner, less-frequent magazine. But it was nothing we could get enthusiastic about. It looked to us like it would be seen as announcement of very serious trouble, which would lower confidence in the magazine, both editorially and from the standpoint of advertising. And then the further question of what the recapitalization would cost and where it would come from was also very much in the back of our mind.

Q. Was there any interest in giving that austerity formula a try? You could terminate it later on.

Carey. If you terminated it later on, from a weak position, you would face a fire sale, which we didn't

(Continued on page 2)

... An Auction Sale "Would Be Out of Taste"

(Continued from page 1)
want.

Q. What were the financial losses in 1985?

Carey. On a budgetary basis, the reverses came to about \$1.5 million. But that doesn't account for indirect costs. The indirect costs associated annually with the magazine were in the range of \$1.5 million. They involve logistical support, inventory, security, communications, all the overhead.

Q. Are they all incremental costs?

Carey. Yes. And they are substantial. If you go back over the life of the magazine, I think we would have no difficulty in saying that the Association, entirely apart from direct costs, had accumulated an overhead well in excess of \$10 million for the magazine. Unreimbursed, unfunded overhead. That meant that it was paid out of members' dues, it was paid from assets of the Association, and the opportunity costs that were forgone. I'd estimate that the entire episode will cost the AAAS around \$12 million.

Q. I understand that things were beginning to come under control and that this year's deficit was narrowing to just a few hundred thousand dollars.

Carey. We've had 3 successive budgets for 1986, each of them a crisis budget, each a fallback budget. They successively aimed at a zero balance, in effect. We have seen absolutely nothing to indicate to us any improvement in advertising. The proposition has been, well, wait until fall, see what the fall bookings of the advertising agencies are going to be. Our confidence in these budget estimates was very low.

Board Debates Sale

Q. Why did you decide to sell to Time?

Carey. In the spring [April 1986] the Board met in executive session to confront the magazine [problem]. There was debate about proceeding to consider a sale. We didn't want to auction the magazine off.

Q. Why not? Gerry Piel auctioned off his magazine [Scientific American]?

Carey. But Gerry Piel is in the profit-making sector. We're a non-profit organization.

Q. That doesn't preclude an auction.

Carey. No, but it did not appeal to us. The Board didn't want it.

Q. Did you think it would be out of taste?

Carey. We thought it would be out of taste, out of character. Furthermore, it had an aura that we didn't like. The aura being that here we had a property on our hands that we regarded simply and objectively as a saleable, disposable property. And our attitude toward *Science86* was, I guess, more sentimental, more spiritual, if you will; more idealistic is the word I've been reaching for. We did it because we thought we ought to do it, because we had a responsibility to do it.

Inquiry from Time Inc.

Q. Why not, then, seek to keep it alive in some other setting?

Carey. All right. That's a good question. Hammond was fully informed of the anxieties I and the rest of the Board had. And he asked me if we would let him proceed to try to work out some arrangement to transfer the magazine's assets to an employee group or some outside partnership arrangement which would try to continue the magazine. And I told him, yes. He brought in Owen Lipstein, whom I had a very high opinion of. And I told them to by all means do the best that they could, and I would take what they produced into the Board.

At just about that point [the end of March], Time Inc. approached me to sound me out as to whether AAAS would give any consideration to their purchasing the *Science86* [subscriber] lists.

Q. Did they have wind of this situation?

Carey. No. I can't read their minds. The only way I can express what I think is to say that they have had a very dismal experience from an economic standpoint with *Discover*. Their losses had indeed accumulated to stupendous proportions, and Time Inc. notoriously dislikes carrying losers on its inventory. And that in the struggle within Time Inc. to decide the fate of *Discover*, they were given

(Continued on page 3)

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... Time Makes Offer, Hammond Seeks Capital

(Continued from page 2)

one more chance, provided they could, in effect, eliminate either the competition from *Science Digest* [the Hearst Corporation science monthly] or *Science86*.

They came to me, they said they had a great deal of respect for what we had done. They admitted they were in deep financial trouble and they knew that we were a poor organization which, while we didn't have losses resembling theirs, we were having losses that hurt. They saw a window of opportunity—that's about the best way I could translate why they came to us and what was in their minds.

I told Hammond and Lipstein that Time had approached us, that Time was going to formulate a proposal. I said that if they could assemble a proposal that was within yelling distance of Time's proposal, that I would be very sympathetic to it, as far as my weight was concerned. Time asked us for an exclusive opportunity to bid. I refused it. Time proceeded then to prepare an offer, successive stages of offers. Hammond and Lipstein worked furiously to try to get venture capitalists to come in. It didn't work.

Q. Lipstein says it didn't work because you refused to give him enough time.

Carey. Well, that's Lipstein's story. Let me tell you this. They had as much running time as Time Inc. had. Let me add that there was a period of about 10 days or 2 weeks where I held off negotiations with Time Inc. in order to provide as much yardage as I could for alternative offers to materialize. Hammond told me, fine, that gives us enough time. As that time ran out, we heard nothing from the Hammond group. They had engaged a New York broker to represent them. The broker kept promising us a purchase contract. The deadlines went by—all of the deadlines that the broker had given us went by.

Q. How much time went by—days or weeks?

Carey. Days went by.

Q. What was the hurry? You had a magazine that had been in business for 7 years. Let's say it hung on for another month or 2.

Carey. Okay, let me tell you what would have happened. Hammond told me, in response to a direct question, that we would have to send material to the printer in the middle of June in order to produce a September issue. We would have been locked into the September and October issues of the magazine, with an outgo of over \$1 million, which would, in effect, augment our loss position by that much.

I was under instructions from the Board not to lose the Time offer, while at the same time giving others an opportunity—since there was nothing exclusive about our arrangement with Time—to come in. We felt, be-

Time Buys Science Digest Magazine; Details of Terms in Sale of Science86

Time Inc. announced on July 24 that it had purchased *Science Digest*, the Hearst monthly science magazine, which reportedly has a circulation of 575,000. The price was unofficially reported at under \$2 million.

As with the *Science86* purchase, *Science Digest* subscribers will be offered subscriptions to any Time Inc. periodical or cash refunds.

The Time-AAAS deal provides for an immediate cash payment of \$3.75 million, plus \$2.25 million, over 5 years, in return for the AAAS abiding by an agreement not to compete with *Discover*, and up to \$1 million for subscribers who sign up for *Discover* and renew upon expiration of their subscriptions.

The AAAS agreed to endorse *Discover* and to permit the *Science86* logo to be used for promotion. But it may withdraw its endorsement if it's displeased with the editorial content of *Discover*.

cause of [the impending deadline for the next issue], we had to make a decision by the end of June. It was clear that the advertising situation was getting worse. It was clear that the Board had no stomach for a starvation policy relative to publishing the magazine.

It was clear that with the weakness of *Discover*'s market position, *Science Digest*'s market position—and the report was that *Science Digest* had already engaged a broker. And hanging over the whole situation was the *Scientific American* development, where the prototype [of the non-professional scientific] magazines was indeed, and in fact, up for auction—a development that, in our judgment, was destabilizing the whole universe of the science magazines. And we felt that we had to make our minds up.

Q. You felt that the impending auction of Scientific American was creating diversions?

Carey. Creating diversions, and a great deal of gossip and comment about the bad shape in which the science magazines were. Those were the circumstances.

Q. How do you know that this was the best price to be had for the magazine?

Carey. It's difficult to say. Back in April, when the Board met, we talked about that. We decided we didn't have the faintest idea what the magazine would bring if it were sold on the market. We engaged Morgan Stanley [New York investment firm] and asked them to do an

(Continued on page 4)

... Rejects Request to "Keep the Gate Open"

(Continued from page 3)

evaluation. Morgan Stanley took a couple of weeks and came back with a seat of the pants estimate that had no analysis behind it. Then they withdrew. They told us that they had found that they had a conflict of interest. We then talked with another well-known, large organization in New York that does a great deal of magazine trading. The head of that firm said, look, you're asking us to do something that's impossible. [He said] the value of a property is in the eye of a purchaser; we can give you a list of what various magazine sales and transactions have brought over the years, but there's no relevance whatsoever to anything, and the only thing that we can do is study your magazine and if you want to engage us to find a buyer, we'll make it as appealing as possible.

So, we didn't know. And then Time came in with a hard offer, and while their first representation didn't interest us, the fact that they wanted it badly and increased their offer—that told us that these were the people with the greatest interest and the most to gain. And, in effect, they would set the market price. We had nothing else to go on.

Why Not an Auction?

Q. Wouldn't this uncertainty about the market value speak in behalf of an auction or at least invitations to bid?

Carey. Well, it could, yes, you could view it that way. What happened was that along about May, I would judge, there was a news leak, attributed to Time, that they had made an offer. This was picked up widely [in the press]. In effect, an auction began, because interested parties began to call to ask permission to look at the financials. This was the phase of kicking tires and slamming doors. All I can tell you is that we didn't have one tangible offer, other than Time.

Q. But you didn't allow potential bidders much opportunity.

Carey. There was enough time for people to come in. *Q. There are a lot of reports that Discover is going to go under.*

Carey. That's possible. My own hunch is that they're not going to go under within maybe the next 3 years. I don't think they're going to make any profit, perhaps ever, but I think their losses will deplete. They wouldn't have come in to buy out our assets after having lost close to \$60 million, with expectation of still further losses in the out years, if they didn't intend to stay there.

Q. Is Lipstein correct when he says that you never gave him a chance, that he needed just a couple of more weeks to get his money lined up?

Carey. Look, what happened was that Hammond told me that I had given them enough time, that they thought

they had a venture capitalist and that it would take another week or so to get it done. That fell through. Just before we had the decisive meeting of the AAAS Board on the 25th of June, Lipstein called and said, gee, he was sorry they hadn't gotten back to us, and that he had another idea and had in mind still another source of venture capital. But [Lipstein said] it would take a while to develop, and could we keep the gate open? I said, no, we can't keep the gate open.

Q. Why not?

Carey. For all the reasons I've gone into. In all of their efforts, they had shown us no basis to give us the belief that they could table [an offer]. They had made promises, they had made commitments. They could not meet them. They kept asking for more time, more time, more time. There just wasn't any basis for doing it.

Scientific American Yardstick

Q. Why couldn't you have terminated publication but still have delayed the sale?

Carey. You're suggesting that we could have stood down, that we could have not proceeded with the September and October issues, we could have informed advertisers that we were backing off of their space commitments, we could have maintained an editorial and a sales staff in an inanimate position, with appalling uncertainty. I don't see much in that option to recommend it. It never entered our minds.

Q. Scientific American, another money-losing magazine, has a profitable book division, but even allowing for that, it has been sold for at least \$52 million [to a West German firm, Holtzbrinck] and an offer later arrived for \$61 million [from the holding company of Britain's Pergamon Press.] Does the price that the AAAS received from Time Inc. seem reasonable against this yardstick?

Carey. In the absence of other offers, yes.

Q. Scientific American announced it was for sale at the end of March, it engaged Salomon Brothers to run an auction, and it didn't announce acceptance of an offer until 3 months later. The AAAS looked at one offer and settled for it in a few weeks.

Carey. I can only say again that we believed that the news was out in good season for other bidders to come in. Had another bidder come to us with substance, with resources, with a commitment or an intention to continue publishing the magazine, it would certainly have arrested our attention sufficiently so that indeed we might well, under those circumstances, have said, wait, wait, the situation has changed. But there wasn't any signal of that kind. I think we had to do what we did.

Q. Was it ever proposed to the Board that the contin-

(Continued on page 5)

Marathon Science Policy Study Winding Up

After one of the longest-running single-subject forums on Capitol Hill, staff members are drafting the report of the House Task Force on Science and Policy, which set out 18 months ago for the most extensive look ever at federal-science relations. But the potential impact of this exercise is more uncertain than is usually the case in report-cluttered Washington.

Running a customary few months behind the original publication schedule, the Task Force's report is slated to come off the press "by October 31"—just when election tumult is at a peak. Barring a special session, Congress won't be back until the New Year, and when it reconvenes, the founder and head of the Task Force, Rep. Don Fuqua (D-Fla.), won't be there. He's retiring to become an aerospace lobbyist (SGR Vol. XVI, No. 9), thereby giving up the chairmanship of the Task Force and its parent body, the House Science and Technology Committee.

Fuqua's forthcoming successor as Chairman, Rep. Robert A. Roe (D-NJ), could use the Task Force report as a base for legislation or further inquiries, but he has shown no interest in the long inquiry, which has largely focused on problems related to federal support of academic research. Committee staff members say they have no inkling of Roe's priorities as Chairman. They are agreed, however, that Roe is temperamentally very different from the easy-going Fuqua, whose chairmanship was marked by comfortable and cooperative relations with the major federal agencies within the Committee's jurisdiction—NASA, DOE, and the National Science Foundation.

The Task Force report will be a big one—26 chapters, covering 400-450 pages in a typewritten version. A draft, due for completion in "late summer," will be

sent for comment to the heads of federal research agencies, selected universities and high-tech industrial firms, and various other organizations, including the National Academy of Sciences.

Few of the recommendations are expected to be of a legislative nature, SGR has been told. Rather, most of them are of the sort that can be put into effect at the discretion of federal agencies.

In any case, there's nothing more useful than a well-situated and determined champion for getting things accomplished in Washington. Fuqua did not bring any great vigor to the chairmanship of the Committee or the Task Force. But at least he mustered an appearance of interest in science-policy affairs. Often the only Congressman there from the 18-member Task Force, Fuqua logged endless hours listening to tiresome testimony by specialists who came in from the hinterlands to enjoy a spot of glory in the Congressional witness chair.

The Task Force report will recognize many longstanding complaints about federal support of science, such as the vagaries of overhead-cost formulas, the burdens of proposal writing, and shortages of funds for equipment and new buildings. Of great interest is where it will come out on the nettlesome subjects of geographic distribution of research funds and the role of economic criteria in award decisions.

But lacking a committed drumbeater, the product of the biggest inquiry ever in this field could quietly come and go without major effects on policy or practice. However, the Task Force has already provided one durable legacy: A daunting heap of specially commissioned reports and studies, plus the transcripts of scores of hearings. Doctoral candidates will be mining that stuff for years.

Science86

(Continued from page 4)

ued publication of *Science86* should be a condition of sale?

Carey. No. We questioned Time Inc. strenuously as to the level of the corporate commitment to continue to publish *Discover*. The answers were, though not of any contractual value, that the disposition of the Time Inc. Board of Directors was definitely to continue publishing *Discover*. That was about all we got out of them, and it's probably as much as we could have.

Q. Does this sale clear the decks for your overdue retirement?

Carey. I had hoped to be out by last December 31. I extended it into the spring, when I found that the search committee was having problems making a decision. Then, I had to extend it again to December 31, 1986,

because they still have not made a decision.

Q. Apart from *Science86*, the AAAS has financial problems.

Carey. The other financial problems are a function of declining interest rates. We invest our portfolio [currently about \$22 million]. And descending from 12 or 13 percent interest to 6 or 7 percent interest hits our budget very, very heavily.

Q. Smart money went into the stock market 2 years ago.

Carey. I know, but our conservative treasurer feels that we should be in treasuries predominantly.

Q. So, the AAAS has gone from 10 to 6 percent in earnings on its investments, and nothing is in the stock-market.

Carey. Very, very little. I believe that will change in the next few months.

Nuclear France Shrugs off Chernobyl Fears

Paris. Chernobyl produced the final blow against Austria's long-stalled nuclear plans, accelerated Sweden's commitment to phase out nuclear power, and revitalized the environmentalist Green Party in West Germany. Elsewhere, including the US, it has chilled the nuclear industry to an extent that could spell serious decline if not doom. But not in France, where nuclear power is so deeply entrenched in the national economy that the Soviet catastrophe has had astonishingly little impact.

Nuclear power is beset by numerous problems in France, but they are different from the rest of the world's. Success, rather than engineering or economic failure, is the main problem of the French atomic energy program. It is the world's second biggest nuclear program, but it is the most unswerving.

Electricite de France (EDF), the national power utility, has succeeded in carrying out a massive program of nuclear-plant construction, only to find itself with a mounting surplus of generating capacity. The surplus is politically and financially embarrassing, but there is no easy way to turn it down. Thirty-six power reactors were in operation at the beginning of this year, with another 25 under construction. In terms of reactors running and under construction, France, with approximately one-fourth the US population, is second only to the US, where 99 reactors are in operation and 32 are being built.

65 Percent of Electricity

Nuclear power provides 65 percent of France's electrical needs, compared to about 15 percent in the US. The percentage in France is rapidly rising as a result of the government's decision in 1973 to reduce its dependence on imported Arab oil. But the glut hasn't prevented the completion and startup of plants long under construction.

EDF has slowed the pace of building to only 1 new plant a year, rather than the 6, of 1300 megawatts each, that it had originally scheduled for this period. But even 1 a year is too much, as was plain from consumption patterns and projections in the early 1980s. EDF's critics say that France will have a surplus of 20 plants by 1990. The utility's officials challenge that number, but they concede that a problem exists.

Three alternatives are most frequently mentioned for getting EDF out of its jam, but none is particularly attractive:

- EDF could delay the start-up of some of the 12 plants due to come on stream in the next 4 years. But that would entail a dreadful public-relations setback for the agency, which has forced the rapid pace of construc-

tion, and it would immobilize a vast amount of investment capital.

- Operation of the new plants at reduced power levels would shave some costs, but would still be economically wasteful. Staffs of 1000 per plant and \$1 billion in capital investment are unaffected by power levels.

- EDF could slow down future plant construction, even below the current rate of one per year. But the cutback would create serious problems for the power-plant construction industry. With export markets for nuclear plants close to non-existent, the industry depends on EDF to remain alive.

Aim for Higher Consumption

In a curious and paradoxical way, EDF has been imprisoned by its mastery of atomic technology. Lacking sufficient domestic fuel sources, EDF placed all its bets on nuclear power—which is why the Chernobyl catastrophe was perhaps more threatening to EDF's managers than to their counterparts in other nations. "It will be impossible for the government to stop using the atomic plants," insists Lucien Gouni, an EDF planner. "We don't have enough oil or coal." Asked what EDF would do if problems, from whatever cause, interfered with the operation of EDF's standardized pressurized-water reactors, Gouni shrugged his shoulders.

Boxed in as it is, EDF is striving for a solution compatible with its power surplus: an increase in consumption, rather than a cut in production. EDF contends that the excess is equivalent to only 2 or 3 1300-megawatt plants. But it is not easy to market more electricity when oil has crashed to \$10 to \$15 a barrel. So, EDF has turned to export markets, selling some of its atomic excess to neighboring countries, including West Germany and Great Britain. The totals are small but rising—1000 megawatts this year, an estimated 2000 by 1987. EDF is also trying to increase sales to domestic industry with preferential rates for off-peak periods, but cheap oil is a difficult competitor.

EDF's surplus stems from 1981, when it was building nuclear plants at the rate of 6 a year and facing political and economic uncertainties. Credible projections at that time forecast a slackening of demand, while the Mitterrand Socialists successfully campaigned for office on a platform that included anti-nuclear sentiments.

Torn between economic reality and the threat of unfriendly government policies, EDF's leaders navigated through the dilemma by adopting Mitterrand's own glowing and inflated forecasts of economic growth. It was necessary, they insisted, to maintain a high level of construction to provide the electric power for the new

(Continued on page 7)

... EDF Thrives as Monopoly Power Utility

(Continued from page 6)

industrial prosperity. The Mitterrand economic plan quickly went sour, but EDF did not scale back its building program until 1983, and even after that decision, it started work on 6 big power plants over the next 3 years.

Holding a monopoly over the production of electricity in France, EDF is a politically potent force unlike anything in the highly fragmented American power industry. It has thwarted the development of a politically effective anti-nuclear movement, though one poked its head up briefly in 1979-80. EDF has prevailed partly because France's highly centralized government endows Paris with a near-monopoly on information and decision-making. "We have been frustrated at almost every turn in our demands for data," a French ecologist says bitterly.

Broad Political Support

EDF has also successfully exploited energy anxieties that span France's political spectrum, from far left to far right. With virtually no domestic sources of energy, Frenchmen are bound in agreement that nuclear power, whatever its potential difficulties, is a necessity. Against this political background, the anti-nuclear forces have never flourished, nor have they been able to use the courts to amplify their power. In West Germany, for example, the courts have halted the construction of a large number of reactors on environmental grounds, but in France, not a single such suit has been won. Politically resounding mass protests against nuclear facilities are common in Western Europe, except for France, where they are virtually non-existent. The big exception over the decades of nuclear-power development occurred in Brittany, where powerful separatist sentiments contributed to the cancelation of construction plans.

EDF has also benefited from a smart, well-connected leadership that has made very few mistakes, politically or technically. The agency suffers none of the disdain frequently heaped on public utilities in the US. EDF officials are drawn from the elite of the French educational system and have established a network that reaches effectively into every French locality. In design, construction, and operation of nuclear plants, EDF enjoys the benefits of nationwide standardization, in contrast to the US, where hundreds of independent utilities do things their own way, with only a weak Nuclear Regulatory Commission to set and enforce national standards.

But not even all its political and public-relations assets can exempt EDF from economic reality. The power surplus not only affects EDF's conventional atomic plants, but threatens development of its centerpiece for

PhDs to Foreigners Rise

American universities awarded non-US citizens a record number of PhDs in science and engineering (S/E) last year, thus continuing a trend that some Washington science-policy makers consider a blessing and others a menace. Many of the graduates remain in the US and fill faculty and industrial jobs that would otherwise be vacant, but many others return home to build goods that American producers can't match.

The latest numbers, reported by the National Science Foundation, show that foreign students received 4847 SE doctorates in 1985, a 1-year increase of 10 percent that brought the foreign share to 28 percent of the PhDs awarded in these fields. In 1984, foreign recipients received 25 percent of the SE PhDs.

The number of PhDs in engineering rose to 3165 in 1985, an increase of 9 percent, with both non-citizen and US enrollments contributing to the growth. But foreign students are in the majority in PhD engineering studies, accounting for 1730 of those degrees. Awards to American citizens rose by 3 percent, but, as the NSF report notes, "Over the 1970-85 period, the number of engineering doctorates awarded to US citizens fell by one-half, and their share of the total in this field declined from 74 percent to 43 percent."

In the sciences, non-US citizens received 3120 of the 15,090 PhDs awarded last year, thus increasing their share from 17 percent in 1978 to 22 percent. Overall, NSF reports, 81 percent of the degree recipients in 1985 held temporary visas.

the next generation of nuclear power, the breeder reactor, which produces more atomic fuel than it consumes. France sped to the world forefront in breeder development, on the now-discredited assumption that a uranium shortage wasn't far off.

A 1200-megawatt breeder has been brought into commercial operation in the south of France by a French-led European consortium. But the construction costs were twice that of a conventional nuclear plant, and there's no sign of a uranium shortage.

EDF says that its program will eventually be vindicated by the return of high oil prices and supply problems. Meanwhile, it is trying to adjust to the power glut coming from its plants. Chernobyl has aroused unprecedented skepticism and opposition to nuclear power throughout the world, but the French commitment remains unchanged.—Jonathan Spivak

(The author, a freelance writer living in France, formerly covered science and technology for the *Wall Street Journal*.)

Science Adviser's Nomination Still Missing

The mystery continued into late July in the wayward nomination of William R. Graham to serve as the President's Science Adviser and Director of the White House Office of Science and Technology Policy (SGR Vol. XVI, No. 11.)

Graham attended a dinner of the White House Science Council on July 17, 6 weeks after the White House announced he was the choice for the dual posts. But in terms of status, Graham was the odd man out, since, without explanation, his nomination still had not been submitted to the Senate, which must confirm the appointment. Meanwhile, Graham continues to hold the post of Deputy Director of NASA. What he's doing there is not clear, but sources involved with the space agency tell SGR that he does not appear to be centrally involved in current NASA affairs.

Graham did not attend the working sessions of the 15-member White House Science Council, which was in Washington for its regular 2-day bimonthly meeting. Council members and OSTP staff say that Graham has stayed away from White House science affairs while his appointment remains in limbo. At the dinner meeting he attended, it was explained that he was present merely to listen and had no official connection with the White House science office or its advisory appendage. Several persons who were there reported that Graham said next to nothing during the evening.

SGR has heard from a number of sources that Graham has run afoul of Senator Ernest F. Hollings (D-SC), the ranking Democrat on the Committee which will receive his nomination, Commerce, Science, and Transportation. That same Committee has jurisdiction over NASA, where Graham was serving as Acting Administrator when the Challenger exploded. At a hearing on the disaster, Graham, in

response to a question from Hollings, said he knew of no objections to the fatal launch; when objections by Morton Thiokol Inc. engineers were later disclosed, Hollings angrily demanded Graham's resignation.

As the delay in sending the nomination to Capitol Hill continues, more and more reports are heard of the alleged Hollings factor. Another Committee member, Senator Don W. Riegle Jr. (D-Mich.), is also said to be peeved by Graham's NASA performance. And Senator Albert Gore Jr (D-Tenn.), who is riding the arms-control issue, is reportedly curious about Graham's reputation as a hardliner.

One source tells SGR that the White House wants to soothe the Senators' reservations before proceeding, but SGR has not been able to nail down anything solid on the whereabouts of the Graham nomination or the reason for the delay.

Graham refuses to talk to the press, which is standard for Presidential appointees who haven't passed all the hurdles. By now, it's possible that his nomination has gone to Capitol Hill, but that still leaves unexplained the long and mysterious delay.

Meanwhile, the White House Science Office is headed on an acting basis by Richard Johnson, a staff member on board when another Acting Director, John P. McTague, resigned in June. The office has been without a full-fledged Director since January 1, when George A. Keyworth II resigned.

An inquiry to the office of White House Chief of Staff Don Regan brought the answer that the nomination is intact and merely caught up in a paperwork delay. Appointees to the President's staff are more closely scrutinized than a mere Deputy Director of NASA, for which Graham was examined and approved just last year. What's certain is that there's been plenty of time to rerun Graham through the clearance, appearance, and financial-disclosure mill.

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